

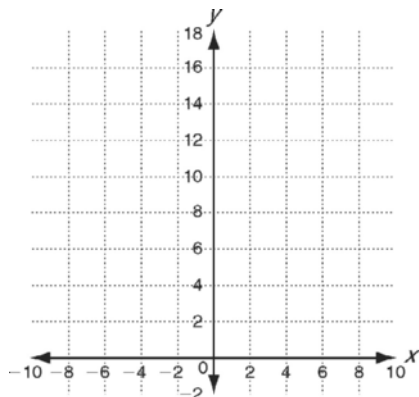
**LESSON**  
**7-7**

**Practice B**

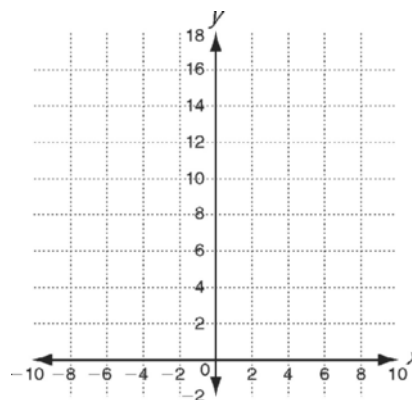
**Transforming Exponential and Logarithmic Functions**

Graph each function. Find the asymptote. Tell how the graph is transformed from the graph of its parent function.

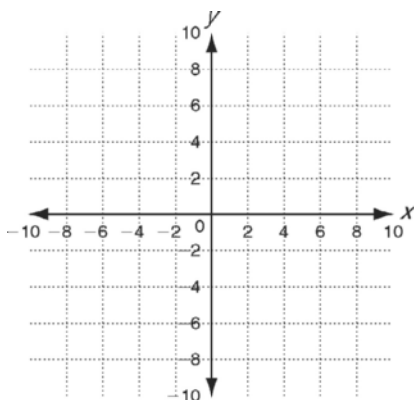
1.  $f(x) = 5(2^x)$



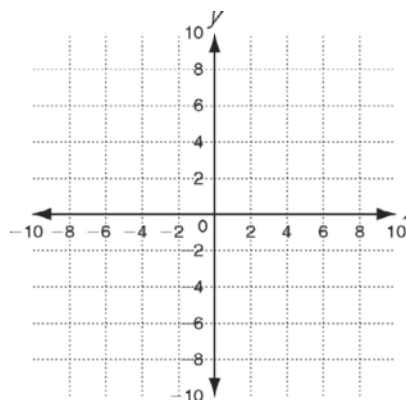
2.  $f(x) = 5^{\frac{x}{4}}$



3.  $f(x) = \log(x + 5)$



4.  $f(x) = 3 + \ln x$



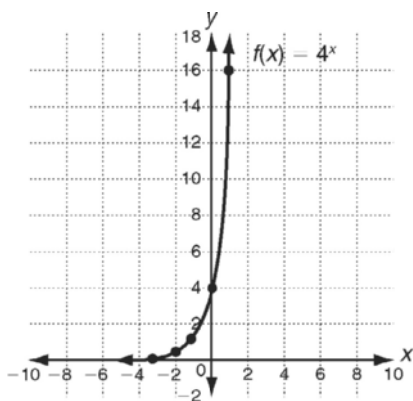
**Write each transformed function.**

- The function  $f(x) = \log(x + 1)$  is reflected across the  $y$ -axis and translated down 4 units. \_\_\_\_\_
- The function  $f(x) = -8^{x-3}$  is reflected across the  $x$ -axis, compressed horizontally by a factor of 0.2, and stretched vertically by a factor of 2. \_\_\_\_\_

**Solve.**

- The function  $A(t) = Pe^{rt}$  can be used to calculate the growth of an investment in which the interest is compounded continuously at an annual rate,  $r$ , over  $t$  years. What annual rate would double an investment in 8 years?  
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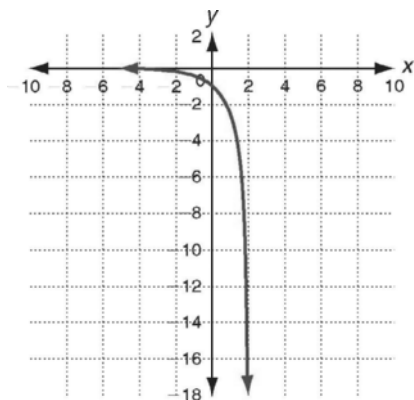
b.



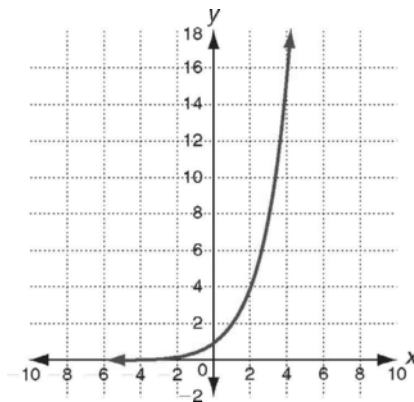
c.  $y = 0$

d. Translated 1 unit left

2.  $y = 0$ ; reflected across the x-axis



3.  $y = 0$ ; horizontal stretch by factor of 2



4.  $g(x) = \ln(-x)$

5.  $g(x) = 8^{2x}$

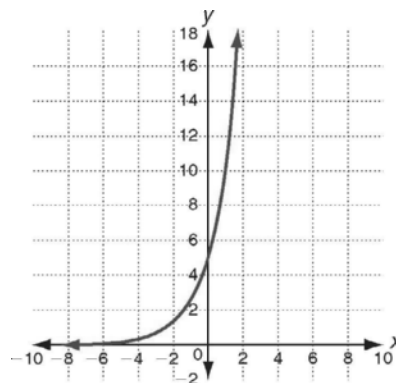
6.  $g(x) = 4(3^x)$

7. a.  $g(x) = \log(x + 3)$

b.  $g(x) = -\log(x + 3)$

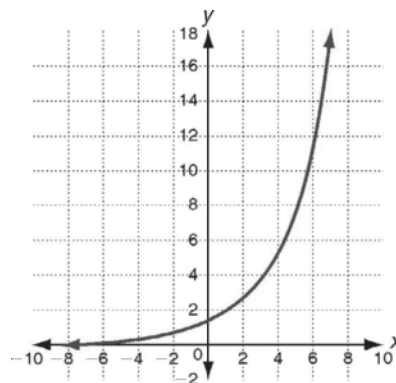
## Practice B

1.



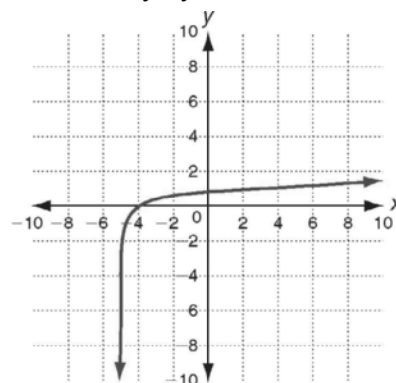
$y = 0$ ; it is the graph of  $f(x) = 2^x$  stretched vertically by a factor of 5.

2.



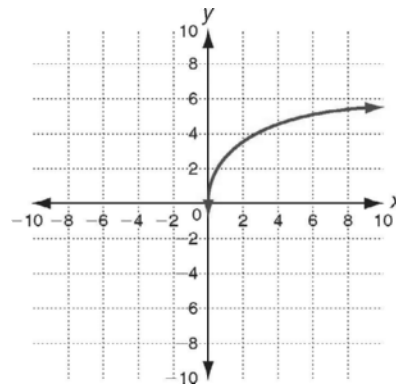
$y = 0$ ; it is the graph of  $f(x) = 5^x$  stretched horizontally by a factor of 4.

3.



$x = -5$ ; it is the graph of  $f(x) = \log x$  translated 5 units left.

4.



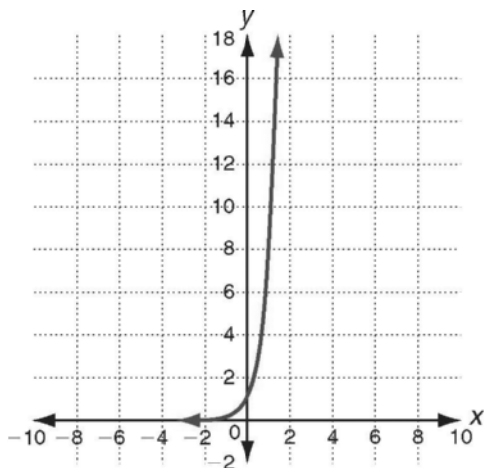
$x = 0$ ; it is the graph of  $f(x) = \ln x$  translated 3 units up.

5.  $g(x) = \log(-x + 1) - 4$

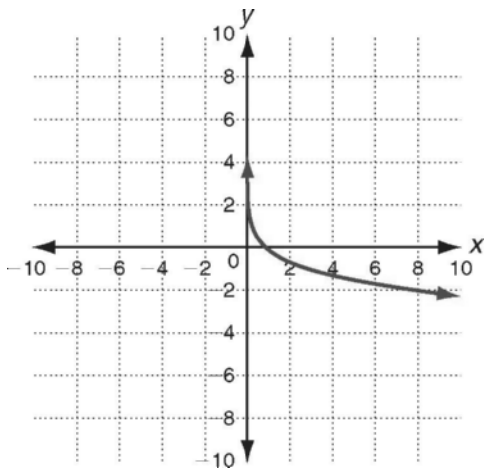
6.  $g(x) = 2 \cdot 8^{5x-3}$       7. 8.7%

**Practice C**

1.  $y = 0$ ; it is the graph of  $f(x) = 3^x$  horizontally compressed by a factor of 0.5.



2.  $x = 0$ ; it is the graph of  $f(x) = \ln x$  reflected across the x-axis.



3.  $g(x) = -7 \cdot 9^x - 1$

4.  $g(x) = -3 \ln\left(\frac{2}{3}x + 8\right) + 7$

5.  $f(x) = -\log(3x + 11) - 2$

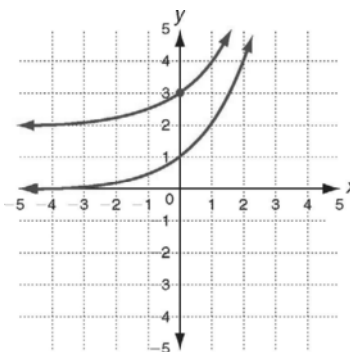
6.  $f(x) = -4 \cdot 7^{x-1} + 5$

7. Translate 2 units up and 2 units right and then reflect across the x-axis

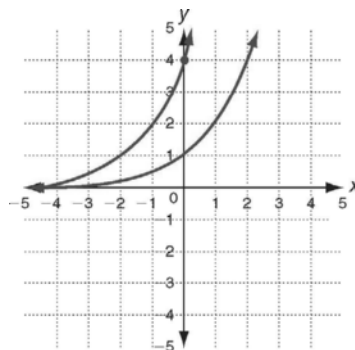
8. \$27,647.16

**Reteach**

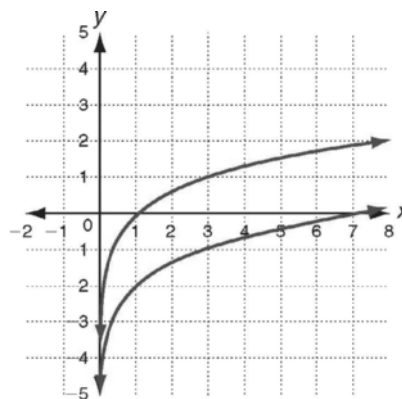
1. 3



2. 4;  $y = 0$



3.  $x = 0$



4.  $x = 1$

